



U.S. Department
of Transportation

**Research and
Special Programs
Administration**

400 Seventh Street, S.W.
Washington, D.C. 20590

APR 27 2001

Ref. No. 01-0055

Mr. Steve Leutbecher
Coleman Powermate, Inc.
P.O. Box 6001
Kearney, NE 68847

Dear Mr. Leutbecher:

This responds to your February 12, 2001 letter regarding the classification and shipment of compressed hydrogen in a "Metal Hydride Storage System", with a subsidiary hazard class of 4.2 (spontaneously combustible), under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). On February 9, 2001, this office responded to your previous request for confirmation that hydrogen absorbed in metal hydrides, with a subsidiary hazard class of 4.1 (flammable solid), would be shipped as "Compressed gas, flammable, n.o.s., (hydrogen, metal hydride), 2.1, UN 1954".

In accordance with § 173.2a(a), a mixture of hydrogen (Division 2.1) and metal hydride (Division 4.2) must be classed according to the highest applicable hazard class and would be assigned to Division 2.1 (flammable gas). Based on information you provided, the Division 4.2 hazard exists only if the cylinder is ruptured or the package is mishandled by introducing air into the cylinder. Therefore, the presence of a Division 4.2 subsidiary hazard, which may be remote or negligible, does not change our opinion on the classification and description of the "Metal Hydride Storage System" as a "Compressed gas, flammable, n.o.s., (hydrogen, metal hydride), 2.1, UN 1954". A subsidiary hazard class, such as Division 4.2 (spontaneously combustible), may be included in the description, but is not required (see §§ 172.202(a)(2) and 172.203(k)).

I hope this satisfies your inquiry. If we can be of further assistance, please contact us.

Sincerely,



John A. Gale

Transportation Regulations Specialist
Office of Hazardous Materials Standards



01-0055

173.124



sleutbecher@powermate.com

Coleman Powermate, Inc. 4970 Airport Road P.O. Box 6001 Kearney, NE 68847 308-236-4538 FAX 308-237-4219

February 12, 2001

Engrum
§ 173.124
Class
Applicability

Mr. Edward Mazzullo, Director
Office of Hazardous Materials Standards
U.S. Department of Transportation
400 7th St. SW
Washington, DC 20590

Re: Shipment of Compressed Hydrogen in a Metal Hydride Storage System

Dear Mr. Mazzullo:

On February 9, 2001, we received a letter of interpretation from your office confirming that hydrogen absorbed in metal hydrides could be shipped as: *Compressed gas, flammable, n.o.s. (hydrogen, metal hydride), 2.1, UN1954*. At that time we considered the metal hydride to have a subsidiary hazard class of 4.1. Since that time we have conducted additional tests and determined that some alloys under consideration do exhibit the characteristics of a 4.2 under certain conditions. It should be noted that these particular conditions are only present when the integrity of the storage system is compromised, the hydrogen is completely depleted and the metal hydride is exposed to oxygen, such as in catastrophic failure of the cylinder. I have attached a letter from a metal hydride supplier explaining this in detail. Please affirm that hydrogen absorbed in metal hydrides can be shipped as: *Compressed gas, flammable, n.o.s. (hydrogen, metal hydride), 2.1, UN1954*, if the metal hydride has a subsidiary hazard class of 4.2 as well as 4.1.

If you have any questions please contact me at 308-236-4538.
Thank you for your attention and prompt reply.

Sincerely,

Steve Leutbecher
EHS Manager

cc: Jeff Grant, Codes & Standards Specialist
Ballard Power Systems